

REMARKS

Claims 1-3, 5 and 9-19 are pending. Claim 1 is amended with the subject matter of canceled claim 8. No new matter is added.

Claims 1-3, 8-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura et al (US20020055030A1) in view of Butler (US6251308B1), evidenced by Fujimoto et al (W002/44285) relied on English Translation (US07132460B2). (Office Action, page 2)

As will be explained, the combination of Okumura and Butler fails to create a *prima facie* rejection of obvious. Further, Fujimoto fails to properly evidence urethane (meth)acrylate.

First, the rejection has accepted that Okumura does not disclose the urethane-modified epoxy (meth)acrylate (B) in the claimed invention.

The rejection alleges that it is obvious to select urethane-modified epoxy(meth)acrylate in Butler as the component (B) instead of vinyl ester resin (epoxy acrylate) in Okumura, and combine the urethane-modified epoxy(meth)acrylate in Butler as the component (B) and the urethane (meth)acrylate as the component (C) which is achieved by Okumura and Fujimoto. (Also as will be explained below, the urethane (meth)acrylate (C) in the present invention is not realized by combining Okumura and Fujimoto.)

However, Okumura does not disclose the combination between vinyl ester resin and urethane (meth)acrylate (emphasis added):

[0017] [Radical-polymerizable Thermosetting Resin]

[0018] It is sufficient that the radical-polymerizable thermosetting resin system comprises at least a radical-polymerizable resin, and the radical-polymerizable thermosetting resin system may comprises a radical-polymerizable resin alone. As the radical-polymerizable resin, there may be mentioned a resin or an oligomer having a α,β -ethylenically unsaturated bond (a polymerizable unsaturated bond), for example, *vinyl ester-series resins, unsaturated polyester series resins, urethane (meth)acrylate, polyester (meth)acrylates and the like*. These radical-polymerizable resins can be used singly or in combination.

That is, Okumura discloses that the radical-polymerizable resin, for example, may be vinyl ester-series resins (abbreviated as "A" below), unsaturated polyester series resins (abbreviated as "B" below), urethane (meth)acrylate (abbreviated as "C" below), polyester (meth)acrylates (abbreviated as "D" below), and these are used alone or in combination. Specifically, Okumura discloses that the radical-polymerizable thermosetting resin system may be: A, B, C, D, A+B, A+C, A+D, B+C, B+D, C+D, A+B+C, A+B+D, A+C+D, B+C+D, or A+B+C+D. Therefore, the percentage of selecting A+B is only about 7%. In addition, these components are only examples of the radical-polymerizable thermosetting resin used in Okumura, because Okumura uses the expressions "and the like" and "for example." That is, the percentage of selecting A+B is less than 7%. If Okumura selects strongly the combination of A+B, the reasons must be stated in order to supply a proper teaching. However, Okumura does not disclose clearly the combination of A+B, and the reasons for selecting this combination.

Butler discloses a resin composition containing an unsaturated polyester resin and a vinyl ester resin which comprises polyisocyanate in a range of from 0.5 to 15% by weight as a rheological modifier.

However, the composition is merely a composition in Comparative Examples 1-3 which contains the component (B) and does not contain the component (C). It is clear from the comparison between Examples and Comparative Examples 1 to 3 in the present description that the composition in Butler has extremely inferior fluidity in molding and appearance of molded article.

The rejection replaces vinyl ester resin in Okumura with vinyl ester (one of the component (a)) and polyisocyanate (one of the component (e)), and alleges that the combination of the component (B) and the component (C) in the present invention is obvious. However, as mentioned above, ***Butler only disclose the vinyl ester (one of the component (a)) and polyisocyanate (one of the component (e)), and does not disclose urethane-modified vinyl ester resin.***

Again, Butler does not disclose the component (C). No motivation exists for combining Okumura and Butler which does not disclose the component (C). In addition, hypothetically speaking, even if Butler disclosed urethane-modified epoxy(meth)acrylate, the rejection still does not explain the reasons for replacing the urethane-modified epoxy (meth)acrylate with vinyl ester resin (epoxy acrylate) in Okumura.

Originally, Okumura does not disclose nor suggest definitely the combination of vinyl ester resin and urethane acrylate. Okumura, [0055], discloses "Among the radical-polymerizable resins, vinyl ester-series resins,are preferred..." In other words, Okumura means that vinyl ester resin is preferably used as the radical-polymerizable resins rather than urethane acrylate. In fact, the Examples in Okumura use only vinyl ester resin. ***There are no Examples in which urethane acrylate is only used, or both vinyl ester resin and urethane acrylate are used.***

Moreover, the component (C) having the features (1)+(3) is not urethane acrylate.

In summary, the cited documents including Okumura do not disclose the combination use of the components (B) and (C) in the present invention. In addition, all cited documents never disclose nor suggest the unique effects for improving moldability which is obtained by using the component (C).

Hypothetically speaking, if the vinyl ester resin in Okumura were replaced with urethane-modified epoxy(meth)acrylate in Butler (as explained above, Butler does not disclose urethane-modified epoxy(meth)acrylate, but assuming *arguendo* it was disclosed), Okumura does not disclose the possibility or motivation for combining the urethane-modified epoxy(meth)acrylate (the component (B) in the present invention) with the (meth)acrylate (the component (C) in the present invention). The rejection does not show the reasons that combination between the component (B) and the component (C) is obvious.

In addition, if the composition of Butler contained the component (B) in the present invention, the composition has extremely inferior moldability without the component (C), similar to Comparative Examples 1 to 4.

Therefore, even if Butler disclosed the component (B), and Butler combined with Okumura, the present invention is not obvious, because ***the combination of the component (B) and the component (C) cannot be derived from combinations of the cited art.***

As the rejection notes, Okumura discloses an urethane (meth)acrylate in [0047] or later. Specifically, Okumura discloses that a reaction product of a polyurethane oligomer having an isocyanate group at its terminal position with hydroxy C₂₋₆ alkyl (meth)acrylate can be used as the urethane (meth)acrylate ([0047]). In addition, Okumura discloses that a reaction product of a diisocyanate component with a diol component can be used as the polyurethane oligomer.

Okumura discloses that examples for the diol component include C₂₋₁₂ alkylene glycols, polyether diols (such as polyoxyC₂₋₄ alkylene glycols), polyester diols, and polycarbonate diols. The previous rejection selected polycarbonate diols and combined with Fujimoto to show the component (C) is obvious. However, the rejection has been withdrawn. Now the rejection selects polyether diols (such as polyoxyC₂₋₄ alkylene glycols) instead of polycarbonate diols at this time.

Okumura discloses polyoxyC₂₋₄ alkylene glycols as a specific embodiment of polyether diols, which are disclosed in a Markush style, that is, in apposition with polyester diols, polycarbonate diols, as a specific embodiment of the diol component. Okumura certainly uses the word "polyoxyC₂₋₄ alkylene glycols." *As shown in Attachments Nos. 1 to 3, alkylene is clearly different from cycloalkylene* (C₂₋₄alkylene is not cyclical, C₆ has the cyclic structure). Therefore, the understanding for polyoxyC₂₋₄ alkylene glycols is not correct.

The rejection states in the Office Action, page 2, "Fujimoto et al (US 7,132,460B2) discloses polyether diols such as polyethylene glycol, polybutylene glycol, 1,2-cyclohexanedimethanol, 1,3-cyclohexanedimethanol, cyclohexanediol (Col. 3, line 57- Col. 4, line 1)". However, this is incorrect. The reasons are explained below.

Fujimoto discloses an active energy ray curable composition for coating optical disk. The composition contains the components (A) to (C), and the component (A) is produced by (a1) amide-containing compounds having at least one amide group and at least two hydroxyl groups in the molecule, (a2) poly-hydric alcohol compounds other than the above-mentioned component (a1), (a3) ..., and (a4).

As the rejection notes, Fujimoto (Col. 3, line 57- Col. 4, line 1) discloses,

As the component (a2), for example, commercially available various poly-hydric alcohol compounds can be used. Specific examples thereof include **polyether diols such as** polyethylene glycol, polypropylene glycol, polybutylene glycol, and 1-methylbutylene glycol; **poly-hydric alcohols such as** neopentyl glycol, ethylene glycol, di-ethylene glycol, ...1,2-cyclohexanedimethanol, 1,3-cyclohexanedimethanol, cyclohexanediol, hydrogenated bisphenol A...

In other words, Fujimoto merely discloses examples of commercially available various poly-

hydric alcohol compounds. *In addition, Fujimoto never discloses these compounds such as 1,2-cyclohexanedimethanol, 1,3-cyclohexanedimethanol, and cyclohexanediol, as polyether diols.* Fujimoto discloses these compounds as poly-hydric alcohol.

It is also clear that these compounds such as 1,2-cyclohexanedimethanol, 1,3-cyclohexanedimethanol, and cyclohexanediol have a cyclic structure, but *does not have an ether bond. That is, these compounds such as 1,2-cyclohexanedimethanol, 1,3-cyclohexanedimethanol, and cyclohexanediol, which the Examiner points, are not polyether diol.*

In summary, the rejection leads to the component (C) in the present invention by combining Okumura and Fujimoto. However, the component (C) cannot be led by the combination of Okumura and Fujimoto, as explained above. That is, the component (C) in the conductive resin composition according to the claimed invention is not obvious.

Based on the disclosure of Okumura and Fujimoto, it is clear that the combination of Okumura and Fujimoto does not achieve the (meth)acrylate (C) having the features (1)+(3) in the claimed invention. Of course, it is also clear that the combination does not achieve the (meth)acrylate (C) having the features (2)+(3).

Before, the rejection had recognized that Okumura does not disclose the urethane-modified epoxy (meth)acrylate (B) in the present invention. It should also be recognized that the (meth)acrylate (C) in the present invention is not achieved by the combination between Okumura and Fujimoto, similar to the urethane-modified epoxy (meth)acrylate (B).

In summary, there is no motivation for combining polyether diols of Okumura and these compounds such as 1,2-cyclohexanedimethanol, 1,3-cyclohexanedimethanol, and cyclohexanediol of Fujimoto. *In addition, it is impossible to achieve polyether diol having a cyclic structure by combining Okumura and Fujimoto.* Moreover, there is no motivation for combining Okumura and Fujimoto, because, Okumura and Fujimoto are the complete different technical field. Specifically, Okumura relates to a resin composition useful as a separator of a solid polymer-type fuel cell. Fujimoto relates to an active energy ray curable composition for coating optical disk.

The (meth)acrylate (C) (second component) in the present invention is compared with

Okumura and Fujimoto in the following Table 1. As shown in Table 1, Fujimoto discloses two components of (a1) and (a2) as a component which is used to produce an NCO group. That is, Fujimoto discloses (a1) and (a2), which can be substituted with polyether diol in Okumura (specifically, polyoxyC₂₋₄alkylene glycol).

As shown in the following Table 1, the intended purpose of polyetherpolyol to produce the component (C) in the present invention is to improve hydrolysis resistance and mechanical strength of the resulting molded article. In addition, Fujimoto discloses that (a1) is a component having an action of improving mechanical strength (toughness) while maintaining the low shrinkage property of the cured coating layer. The intended purpose of polyetherpolyol in the present invention and (a1) in Fujimoto are similar. In contrast, the intended purpose of (a2) in Fujimoto is different from that of polyesterpolyol in the present invention. When the intended purpose is concerned, (a1) is naturally compared to polyetherpolyol. However, the rejection selects (a2), and combines with Okumura.

Table 1

NCO		OH
Present invention		
polyisocyanate having an aromatic cyclic structural unit and/or an aliphatic cyclic structural unit	polyetherpolyol having an aromatic cyclic structural unit and/or an aliphatic cyclic structural unit [page 12, last paragraph] polyetherpolyol is preferable in view of hydrolysis resistance and mechanical strength of the resulting molded article	(meth)acrylate having a hydroxyl group
Okumura		
tolylenediisocyanate (diisocyanate having an aromatic cyclic structure)	polyoxyC ₂₋₄ alkylene glycol (this does not have a cyclic structure)	hydroxyl C ₂₋₆ (meth)acrylate
Fujimoto		
(a3)diisocyanate compound	(a1) amide-containing compounds having at least one amide group and at least two hydroxyl groups in the molecule, and [column 3, line 21 to 25] (a1) is a component having an action of improving mechanical strength (toughness) while maintaining the low shrinkage property of the cured coating layer	(a4) hydroxyl group-containing (meth)acrylate

	(a2) poly-hydric alcohol compounds other than the above-mentioned component (a1) (such as 1,2-cyclohexanedimethanol) [column 3, lines 52 to 56] (a2) has an action to improve the flexibility and elongation of a cured substance of (A)	
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As explained in the present description, page 16, first paragraph, when the *weight ratio (B)/(C) is within a range from 95/5 to 50/50, the conductive resin composition of the present invention has proper moldability and a cured article and a molded article each having excellent performances such as mechanical strength and heat resistance can be obtained.*

By these features, it becomes clear that since the conductive resin composition according to the present invention contains the component (B) and the component (C) in a certain weight ratio, the conductive resin composition of the present invention has proper moldability and a cured article and a molded article each having excellent performances such as mechanical strength and heat resistance can be obtained.

The combination of cited art, without more, simply cannot create a *prima facie* rejection of obviousness as shown above. It is therefore respectfully requested that the rejection be reconsidered and withdrawn.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura et al (US20020055030A1) in view of Butler (US06251308B1), further in view of Numa et al (US05886082A) for the same rationale recited in prior Office Action dated 8/11/2008.
(Office Action, page 6)

Numa is cited for disclosing polyester diols. However, as explained above, the combination of Okumura and Butler fails to create a *prima facie* rejection of obviousness and the disclosure of Numa fails to compensate for the deficiencies of the main two references. Further, the disclosure of polyester diols is simply not enough to provide the motivation to derive the chemically different invention as now claimed.

In light of the showing explained above. It is respectfully requested that the rejection be reconsidered and overcome.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 04-1105.

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Respectfully submitted,

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Encls: 1) IUPAC Gold Book search results "alkylene"
2) IUPAC Gold Book search results "alkenes"
3) Organic Nomenclature